Space Weather Forecast

Issued on Monday, 25 October 2021 at 13:07 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Daily slight chance of Moderate-class X-ray flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Very Low through the period, with only background class flares observed. There are currently three numbered sunspot regions on the Earth-facing disc: the first, AR2886 a simple unipolar group in the southwest quadrant, with this spot stable and inactive. The second, AR2887, is larger and more magnetically complex, though has shown little activity. The final spot, AR2888, has just rotated onto the southeastern limb, currently a simple and small region.

All observed coronal mass ejections in available satellite imagery were peripheral - mostly from behind the eastern limb - with no Earth-directed components.

Solar Wind / Geomagnetic Activity: The solar wind was at background levels throughout. The interplanetary magnetic field was weak and the important north-south component was subsequently weak. Resultant geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: There is a daily Slight Chance of Moderate class X-ray flares, largely the result of the complexity of AR2887, although this has yet to be borne out in observed X-ray activity. There is a possible returning region just over the northeast limb that may yet increase probabilities over the next few days, however these do not yet feature in the percentages.

Solar Wind / Geomagnetic Activity: No Earth-directed coronal mass ejections feature in this forecast period. Coronal hole 15 is expected to become geoeffective sometime late on Day 3 (27th) or early on Day 4 (28th). Due to its positive orientation and given it remains connected to the northern polar crown, an enhancement of solar wind speeds to Slightly Elevated is probable, perhaps bringing Unsettled or Active intervals on Days 3 or 4 in an otherwise Quiet geomagnetic period.

Energetic Particles / Solar Radiation: No solar radiation storms are currently expected.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	3	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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